

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Michael Krebs**

Confirmation No.: **3301**

Serial No.: **10/822,625**

Group Art Unit: 1796

Filing Date: **April 12, 2004**

Examiner: **Patrick Dennis Niland**

For: Reactive Polyurethane Compositions With A Low Residual Monomer Content

Mail Stop Appeal-Brief Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANT'S BRIEF PURSUANT TO 37 C.F.R. § 41.37

This brief is being filed in support of Appellant's appeal from the final rejections of claims 1-8, 10-13, and 16-34 dated June 22, 2010. A Notice of Appeal was filed on August 18, 2010.

1. REAL PARTY IN INTEREST

HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN (HENKEL KGAA) by virtue of the assignment from the inventor recorded September 28, 2004, at Reel 015191, Frame 0004.

2. RELATED APPEALS AND INTERFERENCES

Based on information supplied by Appellants and to the best of the undersigned's knowledge, there are no other appeals or interferences known to Appellants or Appellants' legal representative, or the assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

3. STATUS OF CLAIMS

Rejected: Claims 1-8, 10-13, and 16-34

Allowed: None

Withdrawn: None

Objected to: None

Canceled: Claims 9, 14 and 15

Appealed: 1-8, 10-13, and 16-34. A listing of the claims involved in the Appeal are listed in the appendix entitled CLAIMS APPENDIX.

4. STATUS OF AMENDMENTS

All amendments have been entered.

5. SUMMARY OF CLAIMED SUBJECT MATTER

This heading and the following summary are for the purpose of complying with the provisions of 37 CFR 41.37(c)(1)(v). The independent claims are summarized below. The entire disclosure, however, should be reviewed to obtain a complete understanding of the claim language. The basis in the originally filed specification for independent claim 1 is summarized in the table below.

| Claim Language | Citation to the Specification |
|---|------------------------------------|
| A reactive adhesive, which is solid at room temperature, and which comprises: | Paragraph 0019 spanning pages 6-7. |
| (i) at least one reaction product having free isocyanate groups obtained by reacting reactants consisting essentially of: | Paragraph 0019 spanning pages 6-7. |
| (a) diphenylmethane diisocyanate, of which at least 95 wt.% | Paragraph 0017 on page 6. |

| | |
|---|---|
| is 2,4'-diphenylmethane diisocyanate; and | |
| (b) one or more compounds, each selected from the group consisting of polyalkylene diols having number average molecular weights less than 1,000 and polyester-polyols which are solid at room temperature and are crystalline, partly crystalline or vitreously amorphous; | Paragraph 0019 spanning pages 6-7 and paragraphs 0020 and 0023 on page 7. |
| (c) optionally, one or more of tackifying resins containing active hydrogen atoms, low molecular weight polymers of olefinically unsaturated monomers containing hydroxyl groups, and polyether-polyols having a number average molecular weight greater than 1,000; and | Paragraphs 0034 and 0035 on page 10. |
| wherein said polyether-polyols are selected from the group consisting of polytetramethylene glycols, polypropylene glycols, copolymers of ethylene oxide and propylene oxide, and alkylene diols and | Paragraphs 0024-0026 spanning pages 7-8. |
| (ii) at least one adhesion-intensifying additive which is capable of migration; said adhesion-intensifying additive comprising polyisocyanate having a vapour pressure of less than 10^{-6} hPa at 20°C; | Paragraph 0036 on page 10. |
| wherein said adhesive has a monomeric diisocyanate content of less than 0.5 wt.%. | Paragraph 0042 on page 12. |

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues on appeal are:

(1) whether claims 1-8, 10-13, and 16-34 meet the written description requirement of 35 U.S.C. § 112, first paragraph;

(2) whether claims 1-8, 10-13, and 16-34 meet the definiteness requirement of 35 U.S.C. § 112, second paragraph;

(3) whether claims 10 and 11 are proper under 37 C.F.R. § 1.75(c);

(4) whether claims 1-8, 10-13, 16-22, 24, 25, 27-31, and 34 are novel under 35 U.S.C. § 102(b) by U.S. Patent No. 5,994,493 (“the 493 patent”);

(5) whether claims 1-8, 10-13, and 16-34 are not obvious under 35 U.S.C. § 103(a) over the 493 patent; and

(6) whether claims 1-8, 10-13, 16-22, 24, 25, 27-31 and 34 are properly rejected on the grounds of obviousness-type double patenting over the 493 patent.

7. ARGUMENT

(1) Claims 1-8, 10-13, and 16-34 meet the written description requirement of 35 U.S.C. § 112, first paragraph.

The Examiner alleges that there is no support for the phrase “which are solid at room temperature” as applied to the term “polyester polyols” (June 22, 2010 Final Rejection at page 2). As recited in MPEP § 2163.02, “[t]he test for sufficiency of support in a parent application is whether the disclosure of the application relied upon “reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.” *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)).’ Applicants submit that the original specification provides sufficient written description to satisfy this standard.

The original specification defines “polyols” as “polyether-polyols, polyalkylene diols and/or **crystalline, partly crystalline or vitreously amorphous polyester-polyols**, and **optionally liquid** polyester-polyols.” See, the original specification at paragraph 0023 on page 7 (emphasis added). Thus, polyester polyols can be **crystalline, partly crystalline or vitreously amorphous polyester-polyols**. Applicants further note that this designation is distinct from liquid polyester polyols in the definition (*Id.*). The specification further defines “[s]olid at room temperature” as meaning “the composition is **crystalline, partly crystalline and/or vitreously amorphous** and has a softening point above 23°C (by the ring and ball method).” See, the original specification at

paragraph 0020 on page 7. As such and contrary to the Examiner's allegation, there is sufficient support to recite the polyester polyol as "solid at room temperature."

In response to the Examiner's position that paragraph 0020 of the specification refers to the composition as a whole and not the polyester polyol, the Examiner's view of the definition is too narrow. The definition is of the term "[s]olid at room temperature" and is not limited to a particular moiety. In view of the above, use of this term in regard to polyester polyols is not new matter. Applicants submit that the Examiner's rejection should be overturned.

(2) Claims 1-8, 10-13, and 16-34 are not indefinite under 35 U.S.C. § 112, second paragraph.

The Examiner asserts that the scope of the claims is unclear based on the amendment to claim 1 canceling "polyether polyol" and the recitation of "polyether polyol" in claims 10 and 11 (June 22, 2010 Final Rejection at page 4). Applicants disagree. The definitions of the elements in claim 1 define the compositions recited within claim 1. Any additional elements recited under the comprising language of claim 1 and defined by claims 10 or 11 may not be so confined. Rather, they are defined by any parameters recited in claims 10 and 11 to the extent that the definitions do not broaden the definitions of the elements within the preceding claims. As new elements are defined, there is no broadening. As recited in MPEP § 2173.02, "the requirement for definiteness of 35 U.S.C. 112, second paragraph, is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available." Applicants assert that the pending claims meet this criteria.

(3) Claims 10 and 11 are proper under 37 C.F.R. § 1.75(c).

The Examiner has objected to claims 10 and 11 as being of improper dependent form for failing to further limit the subject matter of a previous claim (June 22, 2010 Final Rejection at page 4). Applicants note, however, that each claim adds an additional element to the elements recited in claim 1. The inclusion of this further element, in and of itself, further limits that which is defined by a previous claim.

The Examiner also asserts that the "polyether polyol" of claims 10 and 11 broaden the definition of scope of the polyols of claim 1. Applicants disagree. The definitions of these elements in claim 1 define the compositions recited within claim 1. Claims 10 and 11 "further

comprise” additional elements and such additional elements are defined by claims 10 and 11 and are not necessarily confined by the separate features recited in claim 1. Based on accepted principles of claim construction, Applicants assert that the claims are proper and that the rejection should be withdrawn.

(4) Claims 1-8, 10-13, 16-22, 24, 25, 27-31, and 34 are not anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 5,994,493 (“the 493 patent”).

Claims 1-8, 10-13, 16-22, 24, 25, 27-31, and 34 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 5,994,493 (“the 493 patent”). Applicants respectfully traverse. The 493 patent does not directly or inherently disclose several features of the pending claims. Any one of the deficiencies discussed below is sufficient to defeat an allegation of anticipation.

Solid versus Liquid Nature of Polyols

The Examiner alleges that certain polyesters polyols of the 493 patent overlap with the polyols of the instant claims (June 22, 2010 Final Rejection at pages 10-11). Applicants disagree. The instant claims recite that the polyester-polyols recited in component (i)(b) of claim 1 are solid at room temperature. The 493 patent, in contrast, recites this component is a liquid at room temperature. *See*, column 5, lines 33-38 of the 493 patent. In particular, the 493 patent states that “[t]he “polyester polyols” suitable for use in accordance with the invention are liquid at room temperature.” *See*, column 5, lines 33-35 of the 493 patent. For at least this reason, the cited art does not teach or suggest each element of the pending claims.

Aromatic polyol component

The 493 patent concerns a polyurethane composition based on (i) polyether polyols and/or polyester polyols and (ii) aromatic polyols. *See*, for example, column 4, lines 23-39. Aromatic polyols are defined in the 493 patent as an alkoxylation product of an aromatic polyhydroxy compound. *See*, the 493 patent at column 5, lines 5-6. The 493 patent does not teach at least one reaction product lacking an aromatic polyol component as claimed by Applicants. In the Applicants claims, the polyol does not include an aromatic polyol, but is instead only selected from aliphatic moieties: polytetramethylene glycols, polypropylene

glycols, copolymers of ethylene oxide and propylene oxide, and alkylene diols. Moreover, as addressed more fully below, the reaction product recited in claim 1 recites reactants defined by the closed “consisting essentially of” language.

The Examiner, however, seems to take the position that aromatic initiators *might* be used in the preparation of the polyols of the instant claims and, thus, become a part of the composition via this route (June 22, 2010 Final Rejection at page 13). This position appears to be based on the Examiner’s understanding of a possibility that may be present in the prior art, but no reference or evidence is otherwise cited to support this position. But just because such an initiator may be a possibility does not mean it is necessarily present in every situation, let alone encompassed by Applicants’ claims. Indeed, even if some compositions in the art contain such species (presumably in small amounts due to their use as an initiator), they would not necessarily be present in the compounds used in the instant claims. The Examiner’s position seems to be based on an assertion of inherency based on his understanding of the state of the art. Applicants disagree.

The standard for inherency is summarized by MPEP § 2112 (IV):

“The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).”

That a small amount of aromatic initiator *may* be used in connection with certain reaction products does not mean that the aromatic polyol component required in the 493 patent is part of Applicants’ claims. This type of possibility is not sufficient to meet inherency and/or the strict identity requirements of anticipation and the rejection should be withdrawn for at least this reason.

The Examiner further argues that Applicants have not shown that the aromatic component impacts the basic and novel characteristics of the composition covered by the “consisting essentially of” transitional phrase (June 22, 2010 Final Rejection at pages 13-14). In view of foregoing, the Examiner’s position is not determinative. In any event, one skilled in the art would expect different properties between aromatic and aliphatic compositions based on the pervasive differences in properties between the two classes of compounds that is commonly known in the art. In this regard, Applicants submit that one skilled in the art would not expect a product including aromatic diols to have the same properties as a compound containing aliphatic diols. As is well known in the art, switching from an aliphatic to an aromatic component would affect basic characteristics of the product, such as the melting point and crystallinity of the segments containing these groups, due to the well known propensity for aromatic compounds to be oriented in a relatively flat configuration which impacts packing of molecules. Thus, the presence and amount of an aromatic moiety as taught in the 493 patent would impact the basic and novel characteristics of the composition. Accordingly, the reaction product (i) of claim 1 is not properly interpreted to include an aromatic diol component.

Previous Cancellation of Polyether Polyol Language from Component “b”

The Examiner states that polyol (ii) of the 493 patent is within the scope of the polyether polyol of component “b” of the instant claims (June 22, 2010 Final Rejection at page 11). Applicants submit, however, that the language “polyether-polyols having number average molecular weights less than 1,000” was removed from component “b” of claim 1 in our last response. This cancellation, in conjunction with the argument concerning aromatic diols discussed above, causes the Examiner’s argument to miss the mark. Because the polyols taught by the 493 patent differ from the polyols of component (i)(b) of instant claim 1 (and the remaining recitations within the claim), the cited document does not anticipate the instant claims.

Content of monomeric diisocyanate

Claim 1 recites that the adhesive has a monomeric diisocyanate content of less than 0.5 wt.%. Such a low level of monomer is not taught or suggested by the 493 patent. The Examples and Comparative Examples of the instant specification show that monomer content rises for examples using 4,4’-MDI versus examples where the MDI is predominantly 2,4’-MDI. *See,*

pages 14-15 of the instant specification, including the Table. In the 493 patent, the MDI used in the examples is a 1:1 mixture of 4,4'-MDI and 2,4'-MDI whereas the instant claims recite MDI having at least 95 wt.% of 2,4'-diphenylmethane diisocyanate. Thus, the claimed low monomer content would not necessarily follow from the 493 patent, and, in fact, the 493 patent disclosure would be expected to produce products having a higher monomer content than recited in the instant claims.

Moreover, the fact that the 493 patent generally discloses that 2,4'-diphenylmethane diisocyanate (2,4'-MDI) is a possible selection for the diisocyanate in claim 9 of the 493 patent does not disclose or suggest the use of at least 95 weight % of such a diisocyanate as claimed by Applicants. Indeed, the 493 patent discloses only mixtures of 4,4'-MDI and 2,4'-MDI that fall below the 95% range or use of "pure" 2,4'-MDI in a two step process where any 2,4'-MDI would be used in a second step after reaction with a different diisocyanate. See, for example, column 4, line 53 to column 5, line 4 and claim 18 (which depends from claim 16). There is no teaching or suggestion within the 493 patent for the instant limitation on monomer content.

For any of the above reasons, the instant claims are not anticipated by the 493 patent.

(5) Claims 1-8, 10-13, and 16-34 are not obvious under 35 U.S.C. § 103(a) over the 493 patent.

Claims 1-8, 10-13, and 16-34 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the 493 patent. To establish a *prima facie* case of obviousness, there must be some reason, either in the documents of record themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the documents or to combine cited teachings. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). Moreover, the cited document (or documents when combined) must teach or suggest all the claim limitations. The reason to make the claimed combination, and a reasonable expectation of success, must be found elsewhere than in Applicants' disclosure, such as in the cited documents, the nature of the problem to be solved, or in the knowledge/understanding of the person of ordinary skill in the art. MPEP § 2143; *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Applicants submit that the instant rejection does not meet these requirements. As set forth above, the 493 patent is deficient in several aspects concerning the instant claims. There is no teaching or suggestion or any reason to modify the teachings of the 493 patent to meet each and every

limitation of the pending claims. Any one of the deficiencies discussed below is sufficient to defeat an allegation of obviousness.

Solid versus Liquid Nature of Polyols

The polyester-polyols of the instant claims are solid at room temperature. As noted above in connection with the alleged anticipation rejection, the polyester-polyols of the 493 patent are liquids. There is no motivation or reason provided for one to modify the teachings of liquid polyols and conform the teachings of the 493 patent with the scope of the instant claims. As such, the cited document does not teach or suggest each element of the instant claims. Absent such a teaching, the 493 patent does not support a *prima facie* case of obviousness.

Aromatic polyol component

As discussed in detail in the remarks concerning the alleged anticipation rejection, there is no teaching in the 493 patent to arrive at a reaction product in the adhesive that does not include an aromatic polyol component. The Examiner relies on alleged inherency to assert *possible* inclusion of the aromatic polyol component of the 493 patent (June 22, 2010 Final Rejection at pages 19-20). As discussed above, the argument presented by the Examiner falls short of the requirements of anticipation. Because the cited document does not teach or suggest each element of the instant claims, the Examiner fails to support a *prima facie* case of obviousness.

Previous Cancellation of Polyether Polyol Language from Component “b”

Applicants previously removed “polyether-polyols having number average molecular weights less than 1,000” from component “b” of claim 1. This amendment moots the argument that “polyol ii” of the cited document falls within the scope of the instant polyols of component (i)(b) of claim 1. This amendment, coupled with the arguments concerning liquid versus solid polyol and aromatic polyol content, renders the instant claim as relating to compositions that are neither taught or suggested by the cited document. For at least this reason, a *prima facie* case of obviousness is not established.

Content of monomeric diisocyanate

The Examiner does not properly support a *prima facie* case of obviousness related to a monomeric diisocyanate content of less than 0.5 wt.%. The 493 patent does not teach or suggest this limitation. The Examiner merely asserts that “the claimed amounts can be thought of as being divided out of the bulk polymer” and that trimer production under certain time and temperatures is well known in the art to produce the claimed amounts (June 22, 2010 Final Rejection at page 18). No support for this allegation, however, is provided. In contrast to the assertions of the Examiner, the low monomeric content is not obvious. As discussed in the instant application:

“[T]he residual content of monomeric diisocyanate in the reaction product depends on the NCO/OH ratio of the reactants in the prepolymer synthesis. At an NCO/OH ratio of 2, such as is often necessary for the prepolymer composition, about 25% of the monomeric diisocyanates employed remains as monomer in the prepolymer. If e.g. 10 wt.% diphenylmethane diisocyanate (MDI) is employed in a prepolymer synthesis at an NCO/OH ratio of 2, about 2 wt.% of monomeric MDI is found in the prepolymer, in agreement with the abovementioned statistical estimation of the order of size.”

Instant specification at paragraph 0008 on page 3. Based on the forgoing teaching that high levels of monomeric diisocyanates are common in the urethane adhesive art, the low levels of monomeric isocyanate content are not what one would expect in an adhesive formulation. As such, Applicants submit that the Examiner has not fulfilled the burden of establishing a *prima facie* case of obviousness.

For any of the forgoing reasons, Applicants submit that the rejection is not proper.

(6) Claims 1-8, 10-13, 16-22, 24, 25, 27-31 and 34 should not be rejected on the grounds of obviousness-type double patenting over the 493 patent.

For reasons analogous to those discussed above concerning the alleged obviousness rejection based on the 493 patent, the instant claims should not be subject to an obviousness-type double patenting rejection based on the same patent. In determining whether a nonstatutory basis exists for a double patenting rejection, the issue is whether any claim in the application defines an invention that is merely an obvious variation of an invention claimed in the patent. When the claimed subject matter is patentably distinct from the subject matter claimed in a

commonly owned patent, a double patenting rejection is improper. *Eli Lilly & Co. v. Barr Labs., Inc.*, 58 U.S.P.Q.2d 1865 (Fed. Cir. 2001). Any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. § 103 obviousness determination (*In re Braat*, 19 U.S.P.Q.2d 1289 (Fed. Cir. 1991)); however, a double patenting rejection must rely on a comparison of only the claims. MPEP § 804, part III.

The claims of the 493 patent lack a teaching of solid polyol, compositions lacking an aromatic polyol component, the claimed polyol component, and the low level of monomeric isocyanate content claimed in the instant claims. Each of these differences is discussed in more detail above. A lack of teaching or suggestion of any one of these elements should result in a defective allegation of obviousness. For reasons analogous to those discussed above concerning the alleged obviousness rejection based on the 493 patent, a *prima facie* case of obviousness-type double patenting is not established.

Respectfully submitted,
/John A. Harrelson, Jr./

Date: October 18, 2010

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8. CLAIMS APPENDIX

1. A reactive adhesive, which is solid at room temperature, and which comprises:
 - (i) at least one reaction product having free isocyanate groups obtained by reacting reactants consisting essentially of:
 - (a) diphenylmethane diisocyanate, of which at least 95 wt.% is 2,4'-diphenylmethane diisocyanate; and
 - (b) one or more compounds, each selected from the group consisting of polyalkylene diols having number average molecular weights less than 1,000 and polyester-polyols which are solid at room temperature and are crystalline, partly crystalline or vitreously amorphous;
 - (c) optionally, one or more of tackifying resins containing active hydrogen atoms, low molecular weight polymers of olefinically unsaturated monomers containing hydroxyl groups, and polyether-polyols having a number average molecular weight greater than 1,000; and wherein said polyether-polyols are selected from the group consisting of polytetramethylene glycols, polypropylene glycols, copolymers of ethylene oxide and propylene oxide, and alkylene diols and
 - (ii) at least one adhesion-intensifying additive which is capable of migration; said adhesion-intensifying additive comprising polyisocyanate having a vapour pressure of less than 10^{-6} hPa at 20°C; wherein said adhesive has a monomeric diisocyanate content of less than 0.5 wt.%.
2. The adhesive of claim 1, wherein said adhesive has a concentration of monomeric diisocyanate of less than 0.25 wt.%.
3. The adhesive of claim 1, wherein at least 97.5 wt. % of said diphenylmethane diisocyanate is 2,4'-diphenylmethane diisocyanate.
4. The adhesive of claim 1, wherein the NCO to OH ratio of the 2,4'-diphenylmethane diisocyanate to the sum of the polyols is 1.1 to 1.9.

5. The adhesive of claim 1, wherein the NCO to OH ratio of the 2,4'-diphenylmethane diisocyanate to the sum of the polyols is 1.2 to 1.75.
6. The adhesive of claim 1, wherein less than 0.3 wt.% of 2,2'-diphenylmethane diisocyanate is present.
7. The adhesive of claim 1, wherein less than 0.1 wt.% of 2,2'-diphenylmethane diisocyanate is present.
8. The adhesive of claim 1, wherein less than 0.06 wt.% of 2,2'-diphenylmethane diisocyanate is present.
10. The adhesive of claim 1, further comprising at least one reaction product of 2,4'-diphenylmethane diisocyanate and at least one compound selected from the group consisting of polyester-polyol and polyether-polyol.
11. The adhesive of claim 4, further comprising at least one reaction product of 2,4'-diphenylmethane diisocyanate and at least one compound selected from the group consisting of polyester-polyols and polyether-polyols, wherein said at least one compound is liquid at room temperature and has a molecular weight of greater than 1,000.
12. The adhesive of claim 1, wherein the reaction product is crystalline, partly crystalline, or vitreously amorphous.
13. The adhesive of claim 1, wherein the adhesive is a hot melt adhesive.
16. The adhesive of claim 1, wherein the adhesion-intensifying additive is present in less than 30 wt.%.

17. The adhesive of claim 1, wherein the adhesion-intensifying additive is present in less than 10 wt.%.

18. The adhesive of claim 1, wherein the adhesion-intensifying additive is at least one compound selected from the group consisting of thiophosphoric acid tris-(p-isocyanato-phenyl ester), triphenylmethane 4,4',4''-triisocyanate, isomeric trifunctional homologues of diphenylmethane diisocyanate (MDI), isocyanato-bis-((4-isocyanatophenyl)methyl)-benzene, 2-isocyanato-4-((3-isocyanatophenyl)methyl)-1-((4-isocyanatophenyl)methyl)-benzene, 4-isocyanato-1,2-bis((4-isocyanatophenyl)methyl)-benzene, 1-isocyanato-4-((2-isocyanatophenyl)methyl)-2-((3-isocyanatophenyl)methyl)-benzene, 4-isocyanato- α -1-(o-isocyanatophenyl)- α -3-(p-isocyanatophenyl)-m-xylene, 2-isocyanato-(o-isocyanatophenyl)- α' -(p-isocyanatophenyl)-m-xylene, 2-isocyanato-1,3-bis((2-isocyanatophenyl)methyl)-benzene, 2-isocyanato-1,4-bis((4-isocyanatophenyl)methyl)-benzene, isocyanato-bis((isocyanatophenyl)methyl)-benzene, 1-isocyanato-2,4-bis((4-isocyanatophenyl)methyl)-benzene, adducts of diisocyanates and low molecular weight triols, adducts of aromatic diisocyanates and triols, an adduct of trimethylolpropane and glycerol, a biuretization product of hexamethylene diisocyanate (HDI), an isocyanuration product of HDI, and a trimerization product of isophorone diisocyanate (IPDI), or mixtures thereof.

19. The adhesive of claim 1, wherein the adhesion-intensifying additive is an adduct of 2,4'-diphenylmethane diisocyanate and a diol with a molecular weight of less than 2,000.

20. The adhesive of claim 19, wherein, the content of monomeric diisocyanate in the adduct is less than 2 wt.%.

21. The adhesive of claim 19, wherein, the content of monomeric diisocyanate in the adduct is less than 1 wt.%.

22. The adhesive of claim 1, wherein the adhesion-intensifying additive is an adduct of 2,4'-diphenylmethane diisocyanate and a polyol with a functionality of less than 3.3.

23. The adhesive of claim 22, wherein the polyol with a functionality of less than 3.3 is trimethylolpropane or glycerol.
24. The adhesive of claim 22, wherein, the content of monomeric diisocyanate in the adduct is less than 2 wt.%.
25. The adhesive of claim 22, wherein, the content of monomeric diisocyanate in the adduct is less than 1 wt.%.
26. The adhesive of claim 1, wherein the adhesion-intensifying additive is an organofunctional alkoxysilane.
27. A process for the preparation of an adhesive according to claim 1, comprising:
contacting the reactants and preventing the reaction temperature from exceeding 160°C.
28. A process for the preparation of an adhesive according to claim 1, comprising:
contacting the reactants and preventing the reaction temperature from exceeding 130°C.
29. A process for the preparation of an adhesive according to claim 1, comprising:
contacting the reactants and preventing the reaction temperature from exceeding 110°C.
30. A process for the preparation of an adhesive according to claim 1, comprising:
forming the reaction product; and thereafter
adding the adhesion-intensifying additive.
31. The adhesive of claim 1, wherein said adhesive has a concentration of monomeric diisocyanate of less than 0.5 wt.%.
32. The adhesive of claim 1, wherein said optional component (c) is a tackifying resin containing active hydrogen atoms.

33. The adhesive of claim 1, wherein said optional component (c) is a low molecular weight polymer of olefinically unsaturated monomer containing hydroxyl groups.

34 .The adhesive of claim 1, wherein said optional component (c) is a polyether-polyol having a number average molecular weight greater than 1,000.

9. EVIDENCE APPENDIX

There is no additional evidence provided.

10. RELATED PROCEEDINGS APPENDIX

Applicants are not aware of any related proceedings.